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STAT I found myself in a somewhat dual position during the presentation of the [redacted] research program. In part, this effort represents the type of approach which is aimed at increasing our knowledge along a broad front. This presentation could have well served as an oral proposal to a group representing the National Science Foundation or the National Institutes of Health. In this context, one can only support enthusiastically the efforts of these investigators in identifying and making some progress towards the solution of a fundamental research problem. It is not necessary to point out that the results of this program would be of basic interest to members of a number of disciplines. I should also add that the basic idea of manipulating picture elements in order to determine the contribution of selected variables in the identification process is a laudable goal which all of us share and would do our best to encourage. In such a context, my comments would be quite different from those I am about to make.

However, the reality of the situation is that this project is being justified with respect to an objective, the extraction of intelligence from aerial photographs, with which I have become identified and involved during the past several years. My comments, therefore, should be evaluated with respect to this goal and not in the more general context of basic research. If one were to ask whether the present proposal will be of service in meeting the sponsor's objectives, a number of logical questions should be posed. Will this approach provide a greater payoff than alternative techniques such as subjecting the same material to examination by multiple sets of interpreters, the possible value of untrained individuals, and to be very complete, the possible use of animals in the preliminary scanning process? I fully realize that this question cannot be answered in the absence of a workable system which in fact is the objective of the present proposal. However, one can make some guesses as to the probable payoff of different approaches. The lack of any such attempt along these lines is a conspicuous deficiency in the present proposal from the sponsor's point of view.

With respect to the present system, I was most concerned with the rather large conceptual gap between the basis for the present proposal and the extensive and expensive hardware required for implementation. In effect, the approach taken by the research team was to make certain assumptions regarding effectiveness and to then discuss the details of an extensive system which would provide a test of these assumptions. This procedure places a heavy burden on any evaluation

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team, to say nothing of your position, since the assumptions cannot be tested in the absence of the complete system. A more reasonable approach would have been to test some of these notions on a smaller scale. Such feasibility studies need not necessarily involve a computerized system. Rather, one could use a smaller number of selected targets which could be manipulated photographically or even manually in a manner analogous to that proposed in the overall system concept. In such a study, questions regarding the effect of the subject's attitude, the influence of repeated exposure to similar stimuli, and a host of other variables which one can never predict in advance, could be exposed to empirical testing. It seems to me that such feasibility studies are more desireable than the alternative which involves tacit acceptance of the assumptions and the construction of a large and expensive system based on reasonable but unfortunately untested assumptions.

I do not wish to appear completely negative with respect to the present proposal. There is certainly a gap in our knowledge regarding those parameters which contribute to object identification. This problem is shared with the medical profession, photo-geologists, and in fact any group which communicates information through photographs. Eventually something like the present approach will be necessary in order to fill in gaping holes in our knowledge. In my present role, I would emphasize two deficiencies in the present proposal; (1) the value of this approach as compared to others in terms of the sponsor's problems, and (2) the requirement in the present proposal that the entire system be built before testing some of the simpler assumptions.

I should add that the presentations by the team were interesting and impressive but must also add that much of what was said had only peripheral bearing on the problem at hand, e.g., statistical analysis, merits of displays, "holes" in a picture problem. A number of very important questions were not touched upon. For example, considering the resolution photographic systems, can one ever be satisfied with presentations which are restricted to poorer resolution or a smaller number of gray levels? Human beings are capable of making discriminations based on extremely subtle cues. To assume that these can be manipulated experimentally and altered within a closed loop system in which the subject's interpretation of the task remains constant is, to my thinking, problematical. The present state of the art, in the sponsor's or even a broader context, suggests a more modest approach, with the same overall goals in mind, but which would permit empirical tests of hypotheses at earlier stages in the development of the system.

These comments are based on discussions with other members of the evaluation team but represent my own opinions regarding the proposal. Because of lack of time, we decided to express our opinions to you individually.

If I can be of any help, please do not hesitate to contact me. It was very nice meeting you last week and I hope that we have been of some help to you with respect to the present problem.

Sincerely,

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Professor of Psychology

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